



US006195921B1

(12) **United States Patent**
Truong

(10) Patent No.: **US 6,195,921 B1**

(45) Date of Patent: **Mar. 6, 2001**

(54) **VIRTUAL INTELLIGENCE SHOE WITH A
PODIATRIC ANALYSIS SYSTEM**

(75) Inventor: **Vinncente Hoa Gia Truong**, 2063 18th
Ave., San Francisco, CA (US) 94116

(73) Assignee: **Vinncente Hoa Gia Truong**, San Jose,
CA (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/406,523**

(22) Filed: **Sep. 28, 1999**

(51) Int. Cl.⁷ **A43B 23/00**

(52) U.S. Cl. **36/136; 36/1; 36/137;
73/172; 73/179; 600/592; 340/573.1**

(58) Field of Search **36/132, 136, 88,
36/93, 140; 12/142 N, 146 M, 1 R; 73/179,
172; 600/592; 340/573.1**

(56) **References Cited**

U.S. PATENT DOCUMENTS

| | | | | |
|-----------|---|---------|-----------------|-----------|
| 5,033,291 | * | 7/1991 | Podoloff et al. | 73/172 |
| 5,323,650 | * | 6/1994 | Fullen et al. | 73/172 |
| 5,357,696 | * | 10/1994 | Gray et al. | 36/136 |
| 5,408,873 | * | 4/1995 | Schmidt et al. | 73/862 |
| 5,566,479 | * | 10/1996 | Gray et al. | 36/137 |
| 5,642,096 | * | 6/1997 | Leyrer et al. | 340/573 |
| 5,678,448 | * | 10/1997 | Fullen et al. | 73/172 |
| 5,929,332 | * | 7/1999 | Brown | 73/172 |
| 6,006,412 | * | 12/1999 | Bergmann et al. | 29/407.04 |

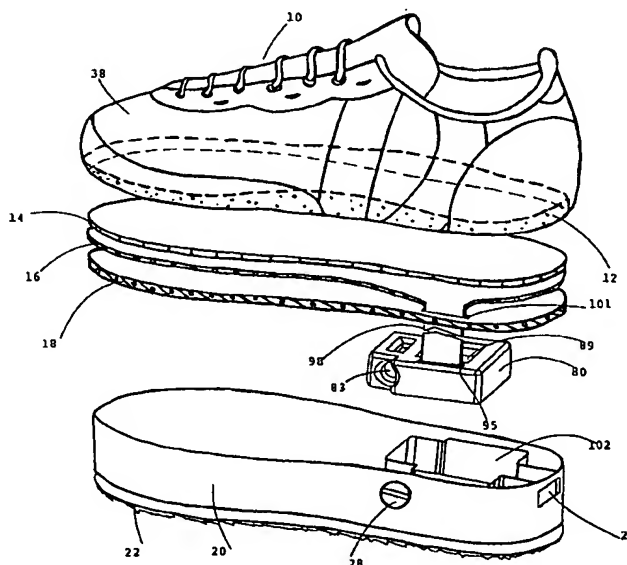
* cited by examiner

Primary Examiner—Paul T. Sewell
Assistant Examiner—Jila Mohandesi

(57) **ABSTRACT**

The virtual intelligence shoe with a podiatric analysis system provided with a portable pair of shoe-like body types thereof, into two of which a miniature electronic module and an enclosed sensor mat are permanently embedded in the shoe-like with a mechanical air package enclosing the electronic module to serve as a shock absorption. A miniature electronic module comprises a transmitting circuit with pressure resistance, shoe temperature and warning buzzer for full memory capacity, which receives the variable pressure and temperature voltage signals, convert them into resistance (ohm) and Celsius, respectively. The electrical signals can be emitted in an infrared light signal. An enclosed sensor mat constitutes a thin, flexible, planar, resilient, and dielectric material that arrays seventy-four positions at strategic geometrical pattern to produce the precision of collecting data exerted by a foot or feet continuously and instantaneously in static and dynamic event during the full weight bearing in various activities. The conjunction of a pair of shoe-like body types, a digital foot scanner, a portable infrared light-receiving unit and a central integrator (servers) form a podiatric analysis system for enabling accurate information. An obtained information of each individual can be stored and analyzed for diagnostic means with respect to the foot or feet maladies. The virtual intelligence shoe with a podiatric analysis system is an unconventional, which can ultimately be used by anyone and capable to produce consistent foot or feet information to implement the changes in the foot or feet biomechanics by altering the shoes, orthoses or other modes. In a preferred form, a pair of shoe-like body types is virtually applied to any type of foot or feet maladies and worn daily as if they were conventional shoes under various terrain conditions.

7 Claims, 12 Drawing Sheets



US-PAT-NO: 6195921

DOCUMENT-IDENTIFIER: US 6195921 B1

TITLE: Virtual intelligence shoe with a podiatric analysis system

----- KWIC -----

Abstract Text - ABTX (1):

The virtual intelligence shoe with a podiatric analysis system provided with a portable pair of shoe-like body types thereof, into two of which a miniature electronic module and an enclosed sensor mat are permanently embedded in the shoe-like with a mechanical air package enclosing the electronic module to serve as a shock absorption. A miniature electronic module comprises a transmitting circuit with pressure resistance, shoe temperature and warning buzzer for full memory capacity, which receives the variable pressure and temperature voltage signals, convert them into resistance (ohm) and Celsius, respectively. The electrical signals can be emitted in an infrared light signal. An enclosed sensor mat constitutes a thin, flexible, planar, resilient, and dielectric material that arrays seventy-four positions at strategic geometrical pattern to produce the precision of collecting data exerted by a foot or feet continuously and instantaneously in static and dynamic event during the full weight bearing in various activities. The conjunction of a pair of shoe-like body types, a digital foot scanner, a portable infrared light-receiving unit and a central integrator (servers) form a podiatric analysis system for enabling accurate information. An obtained information of each individual can be stored and analyzed for diagnostic means with respect to the foot or feet maladies. The virtual intelligence shoe with a podiatric analysis system is an unconventional, which can ultimately be used by anyone and capable to produce consistent foot or feet information to implement the changes in the foot or feet biomechanics by altering the shoes, orthoses or other modes. In a preferred form, a pair of shoe-like body types is virtually applied to any type of foot or feet maladies and worn daily as if they were conventional shoes under various terrain conditions.

TITLE - TI (1):

Virtual intelligence shoe with a podiatric analysis system

Brief Summary Text - BSTX (13):

In particular, there has been no attempt to provide a virtual intelligence shoe which has permanently embedded an electronic module capable communicating with a portable infrared light-receiving unit in order to take advantage of the fact that internet or personal computers are now in relatively widespread use as a convenient and accurate means of storing data, so as to integrate the virtual intelligence shoe with a podiatric analysis system into a comprehensive data keeping and diagnosing analysis system. Since the sensor mat is sandwiching in both upper and lower mid-soles that will give the virtual intelligence shoe with a podiatric analysis system with a sense of control reference to compare each individual over the general population as regards foot maladies.